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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/805,972	03/22/2004	Bart De Cock	920522-95773	1363

23644 7590 04/28/2006
BARNES & THORNBURG, LLP
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EXAMINER

TANG, MINH NHUT

ART UNIT	PAPER NUMBER
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2829

DATE MAILED: 04/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

18

Office Action Summary	Application No.		Applicant(s)	
	10/805,972		COCK ET AL.	
	Examiner		Art Unit	
	Minh N. Tang		2829	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 March 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3, 5-15 and 17-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5-15 and 17-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-3, 5-15, and 17-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Fincher (U.S.P. 4,851,755).

As to claims 1, 7 and 12, Fincher discloses, in Fig. 3, an apparatus and method for detecting rotation of a rotor (12) of a multiple phase motor (10) with bipolar drive, the motor (10) comprising at least a first and a second energizable motor stator winding (14a, 14b), the apparatus comprising means (32) for sequentially and alternately sensing a back electromagnetic force (voltage pulse induced in a deenergized stator winding due to back EMF) on the first and the second motor stator winding (14a, 14b) at or near the end of a period of a non-energized (i.e., deenergized stator winding) state thereof, wherein the apparatus furthermore comprises means (56) for storing sensed voltage values (a predetermined number of consecutive pulses).

As to claims 2 and 14, Fincher discloses in Fig. 3, the means (32) for sequentially and alternately sensing has means (52) for sensing a voltage (i.e., induced voltage pulses) on the first motor stator winding (i.e., the deenergized stator winding) during energizing of the second motor stator winding (i.e., energized stator winding), and means (52) for sensing of a voltage (i.e., induced voltage pulses) on the second motor

stator winding (i.e., the deenergized stator winding) during energizing of the first motor stator winding (i.e., energized stator winding).

As to claims 3 and 15, Fincher discloses in Fig. 3, the means (32) for sequentially and alternately sensing has a fixed or adjustable relative position in a non-energized state time-window (see column 6, lines 35-38).

As to claims 5 and 17, Fincher discloses in Fig. 3, the means (32) for sensing has means (52) for sensing multiple voltage samples (61-64), further comprising means (56) for storing the multiple samples (61-64).

As to claim 6, Fincher discloses in Fig. 3, the motor (10) is driven in microstepping operation.

As to claims 8 and 18, Fincher discloses in Fig. 3, means (54) for outputting a detection signal (65) indicative of a stalled condition of the motor (10).

As to claims 9 and 19, Fincher discloses in Fig. 3, means (54) for outputting a detection signal (65) indicative of a rotation of the motor rotor (12) or derivatives thereof versus time.

As to claims 10 and 20, Fincher discloses in Fig. 3, means (50) for sensing a unipolar signal across one non-energized motor stator winding (deenergized stator winding) by connecting one terminal of the motor stator winding (14a, 14b) to a fixed or reference potential while measuring the voltage at an other terminal of that non-energized motor stator winding (deenergized stator winding).

As to claims 11 and 13, Fincher discloses in Fig. 3, excluding a three-phase motor with bipolar drive with star connected coils.

Response to Arguments

3. Applicant's arguments filed on March 16, 2006 have been fully considered but they are not persuasive.

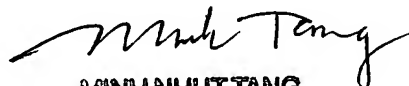
Applicants, in the Remarks pages 8 and 9, filed on March 16, 2006, asserted that Fincher does not disclose storing voltage values in a memory device because a sensed voltage value (also information about amplitude!) is different from a single bit (1 or 0); Fincher does not hint in the direction of storing full voltage values in a memory device and does also not disclose any further processing of the Vbmf signal. The Examiner respectfully disagrees because, as disclosed in column 2, lines 6-30 and column 7, lines 3-12 of the Fincher reference, during each step a back electromagnetic force (EMF) in form of a voltage pulse is induced by the motion of the rotor into the deenergized phase of the stator, the pulse detection/discrimination circuit detects the amplitude and polarity of the induced pulse, and determines whether the obtained pulse indicates actual motor movement, the circuit 54 compares the information obtained on lines 61-64 with the information on line 66, and it provides an output pulse on line 65 of one logic level, for example a high level pulse, when comparison is obtained, and of a second logic level, for example a low level pulse when comparison is not obtained, the history register 56 receives and stores a predetermined number of consecutive pulses applied thereto via line 65; therefore it is believed that the Fincher reference discloses storing sensed voltage values (i.e., number of consecutive pulses, for example number of consecutive high level pulses) in a memory device (history register 56).

Communication

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Minh N. Tang whose telephone number is (571) 272-1971. The examiner can normally be reached on M-F (7:00-3:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael M. Fahmy or Robert Pascal can be reached on (571) 272-1705 or (571) 272-1769, respectively. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


MINH NHUTTANG
PRIMARY EXAMINER
4/25/06